Volunteer Firemen

Professional Journal of the Volunteer Firemen's Section of the National Fire Protection Association

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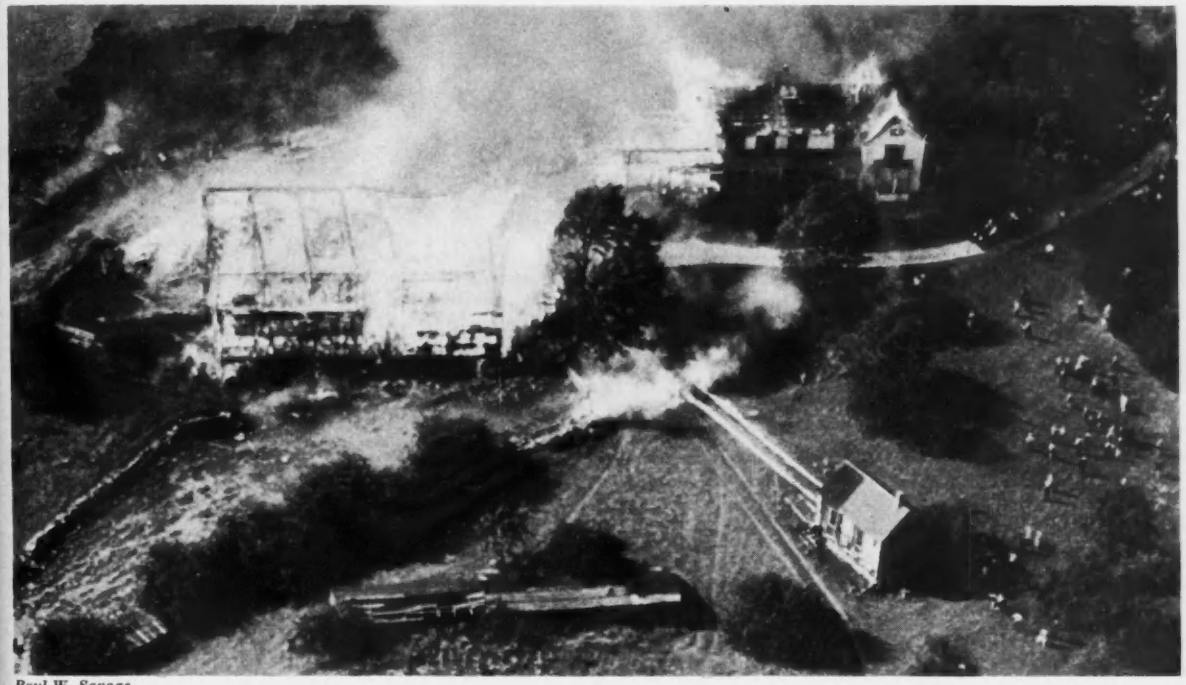


Paul W. Savage

Disastrous barn fire caused by spontaneous ignition of hay. Very little water was available and the fire spread to the house.

The Challenge of Spontaneous Ignition

Volunteer Firemen Have the Experience Which Might Solve the Age Old Mystery of Fires from This Cause

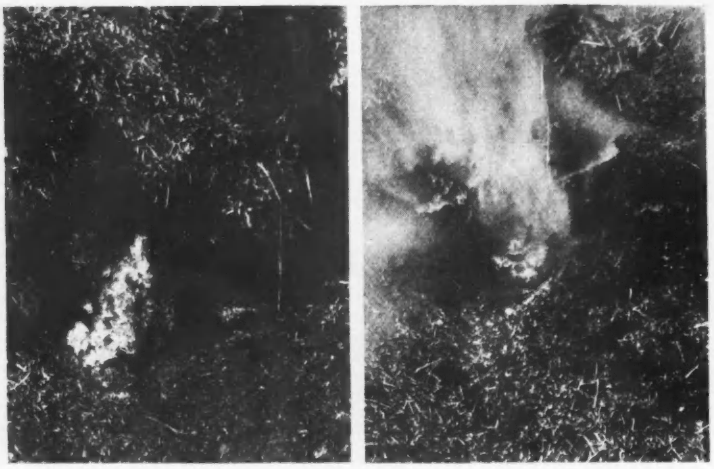
A ROMAN writer of the first century A.D. wrote that if hay "retains too much of its juice, it rots on the scaffold and when it has become hot often ignites and catches fire." Another man of that time wrote "When the grass is cut it should be turned towards the sun and must never be stacked until it is quite dry. If this last precaution is not carefully taken, a kind of vapor will be seen rising from the rick in the morning, and as soon as the sun is up it will ignite to a certainty and so be consumed."

The phenomenon these early writers were describing is that of spontaneous ignition, which currently destroys about fifty million dollars worth of hay and agricultural products each year.

The problem of spontaneous ignition has so far largely baffled the best scientific minds who confess their relatively limited knowledge of what spontaneous ignition is and what causes it. We believe, however, that firemen and particularly volunteers, have the answer to the problem. They participate in the extinguishment of thousands of the fires which start from this cause in barns and other buildings.

How would you individually care to tackle this problem? Is one which has so far baffled solution too much of a challenge for you? For any *one* individual fireman, it might be, but if the 24,000 readers of VOLUNTEER FIREMEN would pool their experiences with spontaneous ignition fires, we believe the answer might be found.

If you have ever attended a fire the origin of which was attributed to spontaneous ignition, you have first-hand knowledge which is of the greatest value in a study of spontaneous ignition fires.



Hot pockets in chopped alfalfa hay stored in a hay mow. A temperature of 286° Fahrenheit was read at the pocket at the left which shows the hay had already burned. The pocket at the right started to burn 21 minutes after exposure to air.

On page 3 is a report form arranged in such a manner that the information on such fires may be sent in for study and analysis. This report blank was prepared by the N.F.P.A. Committee on Spontaneous Heating and Ignition which was organized six years ago. Under the leadership of Dr. H. H. Brown, Consulting Chemical Engineer of New York City, this committee includes distinguished scientists and engineers representative of the state and federal governments, agricultural, industrial and insurance organizations, transportation interests and others from all sections of the United States and Canada. They are at the stage where their present first-hand data on the subject is insufficient and need the help which only your practical knowledge and experience can supply. Don't think that the little you know about one or two such fires won't help, because it will. Taken with data on other fires, your information may provide valuable clues in the pursuit of this phenomenon. Fill out and send in the blank today.

IT IS generally believed that hay, grain, and other plant materials heat up because of the action of germs or bacteria. Chemical or other heat-producing reactions carry temperatures produced by this bacterial action to the point of ignition. There is, however, considerable difference of opinion about the whole problem.

Last year the State Fire Marshal of Oregon became alarmed over the dozens of spectacular and costly barn fires caused by spontaneous ignition of hay in that state. During the haying season he issued a warning to farmers over the radio to keep a close watch over their stored products. The Fire Marshals Department of the Province of Ontario has also done valuable research in investigating spontaneous ignition fires.

August is the most dangerous month for fires caused by spontaneous ignition of hay. Eighty percent of all such fires on record occur during June, July, and August. A fire is most likely to occur from two to six weeks after the hay is stored.

In addition to hay, data compiled by the U. S. Department of Agriculture shows that other farm products such as wheat, corn, oats, fruits, vegetables, and even straw are subject to the hazard. Horse manure which has been allowed to accumulate in large piles in stables or against buildings is also hazardous. (Of course other materials such as cotton waste and rags that have been used for wiping up linseed or other animal or vegetable oils cause many fires in every community.)

Hay stored in barns is more likely to heat than that stored in stacks. As a practical matter it is known that losses from fire and spoilage resulting from spontaneous heating can be reduced to a minimum by seeing to it that the hay is sufficiently cured when stored and then kept dry. Cured hay that has become wet from rain or dew should be cured again.

Two years ago a farmer noticed that the alfalfa hay in one corner of his barn was hot and steaming, and had a pungent odor. Believing it would ignite if he left it undisturbed, he called volunteer fire companies before trying to remove the heated section of hay from the mow. This was a wise thing to do, because when air finds its way to a fire pocket or hot spot, the hay bursts into flames. Firemen had their hose lines ready, but when someone opened the doors at each end of the hay mow, there was an explosion which shot flames over the entire surface of the hay. The fire department went into action promptly and brought the fire under control, but not until the upper section of the barn had been destroyed.

Hay burns fast and firemen know that by the time they make a run of several miles to a barn fire in the country it's a pretty tough job to stop it even though there may be plenty of water. Even digging into a hot pocket of hay in the mow or in a stack is dangerous business unless plenty of water is at hand to drown the fire as soon as it starts. Hot pockets lose no time in bursting into flame when they are suddenly exposed to air.

Tests on a hay stack 12 feet in diameter and 14 feet high were recently made in Michigan. The temperature at the center kept increasing until at the end of six weeks the hay ignited. This fire was put out but the stack continued to be watched. Within the next three weeks several other fires started. It was concluded that hay may safely be stored in a small stack, or in a larger stack if it has a ventilating core in the center.

A list of the material which has been published on spontaneous heating and ignition will be sent to any interested reader on request.

About $10,000 damage was done to this modern barn by spontaneous ignition of hay in the mow.

Report Form for Fires Caused by Spontaneous Heating and Ignition

Give as many details as possible, but send in whatever you have even though it may not be complete. Additional information or comment would also be helpful. Extra sheets of plain paper may be used for this purpose. You may also give the information covered by this form on separate plain sheets if you would prefer not to tear out this page. Extra blanks for reporting other cases will be sent on request.

1. Date and location of fire .....
2. Owner of premises ..... Address .....
   Operator of premises ..... Address .....
3. Owner of material ..... Address .....
4. Loss to building $..... Loss to contents $.....
5. Loss of life or personal injury .....
6. Kind of material .....
   (*a*) Composition .....
   (*b*) Moisture content .....
   (*c*) How packed (loose, packages, containers) .....
   (*d*) If in packages or containers, give size and weight .....
7. Quantity stored ..... Date put in storage .....
8. Method of storage (size of piles, bins, etc.) .....
9. Condition of material when put into storage .....
10. How long was material packed before going into storage? .....
11. Facilities for ventilation .....
12. Approximate temperatures for days before fire: (*a*) outside ..... (*b*) inside .....
13. Precautions taken to prevent spontaneous heating .....
14. Previous indications of heating (burnt odor, sweating, vapor) ..... How long before fire? .....
15. Indications of leakage of water, oil, chemicals, etc., on the material .....
16. Reasons for believing fire was the result of spontaneous ignition .....

Additional Questions on Hay

As an indication of the kind of information that would be of value in special cases, answers to the following additional questions would be beneficial in the case of spontaneous heating and ignition of hay:

1. Variety of hay .....
2. Was hay long or chopped; loose or baled? .....
3. Was hay dry, damp or wet when put in storage? .....
4. Was salt or other material added to the hay when stored? .....
5. If so, approximately how many pounds per ton of hay? .....
6. Was spontaneous heating observed in the hay after storage and if so, how many days afterward did fire occur? .....
7. Was the barn roof leaky? .....
8. What previous experience had this farmer with the spontaneous heating and ignition of hay? .....

When filled out, mail to:

National Fire Protection Association,
60 Batterymarch Street,
Boston, Massachusetts.

Information supplied by:

Name .....
Address .....
.....

Effective Ventilation

Getting the Smoke Out So That Firemen May Get In Requires Accurate Knowledge of Where Building May Be Opened Up

By Chief J. W. Just
Western Actuarial Bureau

IN FIRE department terms, ventilation may be defined as "removing dangerous or disagreeable smoke and gases and replacing them with fresh air so that firemen can enter the building to fight the fire." It is the very backbone of the modern fire department in its job of stopping fires. Fire chiefs and firemen have found that through the practice of ventilation their jobs are made a lot less disagreeable and less of a personal hazard.

A few years ago, before ventilation was widely practiced, the hazards to firemen were accepted as a matter of course—a part of the job of fire fighting. Many men lost their lives or were seriously injured while entering buildings and encountering heat, smoke, and gas before reaching the seat of the fire.

The problem of ventilation is one that concerns the individual building, and there are no hard and fast rules. However, a few of the basic principles can be discussed, and some of the common mistakes noted and analyzed.

The question is frequently raised as to the necessity for ventilating a residential fire. The answer simply is this: that wherever the fire is not in evidence, and the building is heavily charged with smoke, ventilation is not only desirable but highly advisable.

On the other hand, if the fire is in evidence, it is rarely ever necessary to start ventilation at once. However, it is usually important to follow up with ventilation to prevent excessive smoke damage, to facilitate salvage operations, and to be sure that the fire has been entirely extinguished. The point is that ventilation may not be necessary to locate or extinguish fire, but is otherwise desirable.

Acme

Dense and suffocating smoke often claims the lives of occupants on upper floors. Stores on first floors increase the fire hazard of dwellings above. Firemen on the roof are opening up to let out the smoke.

In the case of a smoky basement fire in a building located in the center of the block, the fire fighting task is sometimes made doubly difficult by the wrong method of attack. Lines are laid in from both street and alley simultaneously. By so doing the smoke and gases are confined to the basement, or are forced up through the building. In such a fire, if lines are laid from both directions and charged, but used from the one direction only at first (operating with the prevailing wind), the operation will tend to push the smoke out at the other end of the basement, and thereby accomplish a very desirable form of ventilation. It will also save the firemen at both ends of the basement a considerable amount of unnecessary grief.

Take the case of a three-story building having a flat roof, a blind attic, and with an open elevator shaft through all floors at the north end of the building. In the event of a smoldering fire on the first floor, at the south end, smoke and gas will rise to the ceiling, travel north to the elevator shaft, go up the shaft to the ceiling of the top floor and mushroom out.. Thus it will be seen that the third floor will be the first to be dangerously charged with smoke and gases. After this floor is loaded, the smoke will then back down and load the second, and after that the first. The most dangerous point therefore is the third or top floor.

In ventilating this building, the proper point to open in the roof is directly over the elevator shaft—being sure to use a pike pole to break down the ceiling below. This illustrates one point where a knowledge of building construction is highly essential. Many attempts at ventilating have been failures owing to the unknown presence of a false ceiling below the roof.

By opening the roof at the opposite end of this building from the elevator shaft, fast ventilation cannot be obtained. Furthermore, should a flash fire or smoke explosion occur, it is evident that the fire will be drawn from the

elevator shaft at the north end of the floor across to the roof opening at the south end. This would involve the entire third floor in fire, whereas if the roof had been opened over the elevator shaft, the fire would have gone out through the roof directly at that point. It should also be noted that with ventilation at the south end, even had no flash occurred, all the smoke in the building would have been drawn across this floor, adding considerably to the smoke damage to the contents.

Another point to remember is that when it is possible to ventilate by using windows, the windows should be opened at both bottom and top. I have found it best that a window should be open two-thirds of the way down from the top, and one-third up from the bottom, thus enabling the air to enter at the bottom and force the gases out at the top. It may even be necessary to break a top sash at one point and a bottom sash at another.

Opening up *above* a fire prevents back draft or "smoke explosion" by permitting the gases in the building to escape. (Smoke and gas is lighter than air and rises to the highest points.) If openings were first attempted *below* these gases, the oxygen coming in might bring this gas mixture within the explosive range, and any source of ignition would cause an explosion.

What must be known in order to do an effective and safe job of ventilation may be listed in five paragraphs as follows:

1. Men should be trained and disciplined to work together, and to do certain tasks with a minimum of supervision. There must be team work between the men doing the ventilating and the men laying lines, in order that the building will not be opened before lines are laid and charged, and all necessary preparations taken to fight fire when it shows.

This church is so full of smoke that it is impossible to tell from the outside just where the fire is located. Ventilation is necessary before men can get inside to find the fire.

2. Men should have a thorough knowledge of the building. For example, they should know the construction of the building, walls, floors, roof, skylights, penthouses, and whether or not there is a blind attic. They should know the type, location, and protection of horizontal and vertical openings. They should know the location and type of partitions, and all other structural features that would have a bearing upon the spread of fire or gases.

3. Men should have a fair knowledge of the type of occupancy and the nature of the contents, whether of a fast-burning or a smoldering nature. They should know whether or not there is anything in the building of an explosive nature or that will produce toxic gases in any quantity.

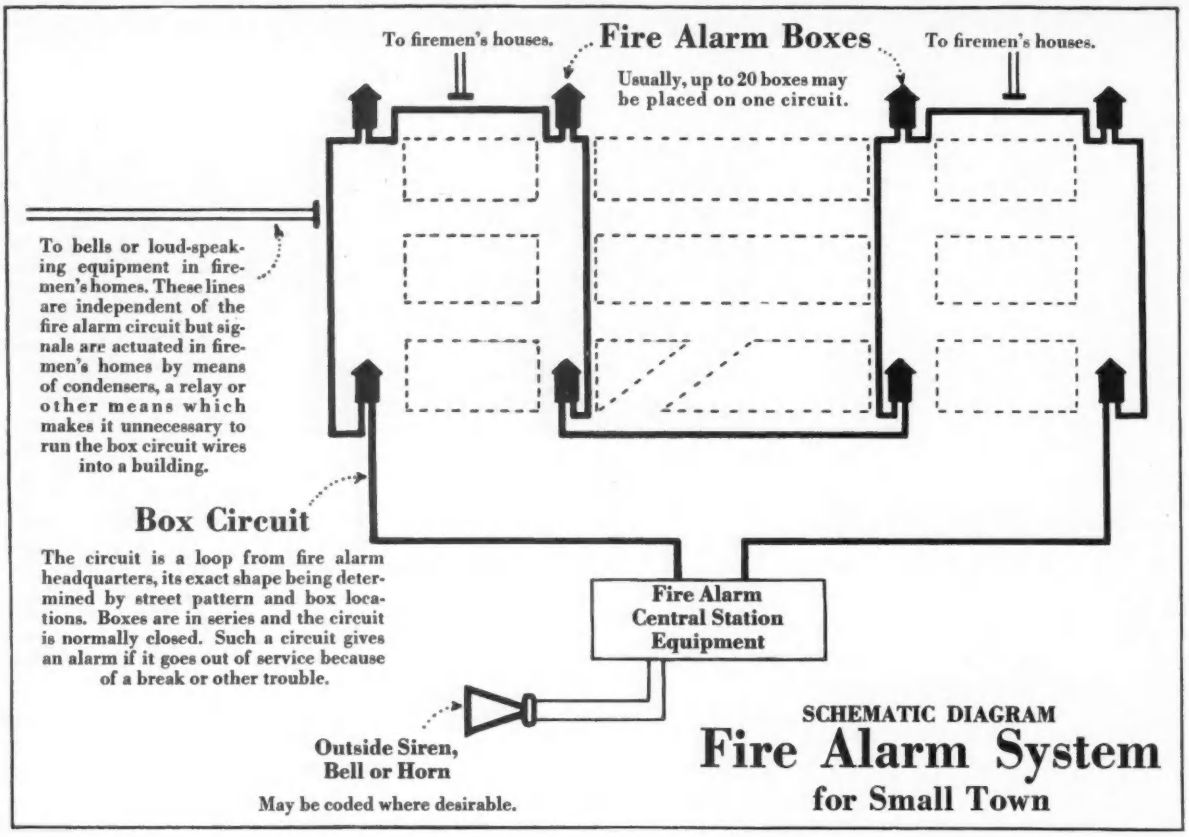
4. Men should have first-hand knowledge of exposures and the contents of exposing buildings. This includes information as to wall construction, roof construction, parapets, wall openings, exposed penthouses, and similar features.

5. Men should have thorough training in the use of fire department tools so that any job of ventilation will present a workmanlike appearance, and not look as though dynamite had been used to make necessary openings. Furthermore, any hole cut for ventilation should be of ample size to accomplish that end, usually never less than five square feet.

Ventilation should never be accomplished until the lines are laid, charged, and ready for any emergency. Where it may endanger exposed property, no ventilating should be done until steps have been taken to protect such property.

Fire departments find that they cannot fight fires intelligently or effectively without practicing ventilation. Neither can a department practice ventilation successfully without preceding their fire fighting with inspections of all properties in the community. Thorough inspections, knowledge of properties, and use of good judgment make ventilation the backbone of successful fire fighting in modern fire departments.

In order that a quick and safe job of ventilation may be accomplished familiarity with the larger buildings in the community is required. Firemen obtain this through regular inspections.


To firemen's houses.
Fire Alarm Boxes
Usually, up to 20 boxes may be placed on one circuit.
To firemen's houses.
To bells or loud-speaking equipment in firemen's homes. These lines are independent of the fire alarm circuit but signals are actuated in firemen's homes by means of condensers, a relay or other means which makes it unnecessary to run the box circuit wires into a building.
Box Circuit
The circuit is a loop from fire alarm headquarters, its exact shape being determined by street pattern and box locations. Boxes are in series and the circuit is normally closed. Such a circuit gives an alarm if it goes out of service because of a break or other trouble.
Fire Alarm Central Station Equipment
Outside Siren, Bell or Horn
May be coded where desirable.
SCHEMATIC DIAGRAM
Fire Alarm System
for Small Town

To Call the Fire Department

Fire Alarm System Not Only Speeds Fire Calls But Gets Fire Department to the Right Place Every Time

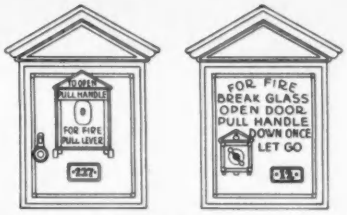
WHY does the fire department go so fast to fires? Laymen often think that too much insistence is placed on speed. As a fireman you have undoubtedly often had to explain that minutes and seconds count at a fire—they may be the difference between life and death, or a fire successfully controlled as against a conflagration.

Fire alarm systems were developed by fire departments to help them in their battle for the first few minutes of a fire. The department wants to know, not only that there is a fire, but exactly where it is.

Persons often express surprise that a fire department should ever want any means other than the telephone for receiving fire calls. Nearly everybody has a phone, and isn't it logical to use it in an emergency? The telephone companies have done a lot to make the telephone more and more reliable, and where there are no fire alarm systems do a valuable public service in furnishing fire department communications. The officials of telephone companies point out that while they make every effort to give the best possible service, they are not in the business of handling emergency signals and will not assume liability in case of failure of the telephone facilities. It is significant that for the protection of their own properties, such as warehouses and large central offices, telephone companies themselves use standard fire alarm boxes, circuits and equipment.

The telephone works on an open circuit whereas the fire alarm works on a closed circuit. This is an important difference. How many times have you picked up a telephone and waited without an answer from the operator? After a long wait you conclude that the line is out of order. In case you had picked up the phone to report a fire, it would be just too bad.

The closed circuit of the fire alarm system is one in which a current is constantly flowing. Any break in the line, or a ground, immediately makes itself known by ringing trouble bells at the fire alarm headquarters. If the system is arranged to blow an outside siren or horn automatically, such trouble will give a single blow to announce the trouble and it can be fixed. Even if the circuit is grounded or broken, it can still be arranged so that under such circumstances, a signal from an alarm box will come in as usual. This is an important feature.



Types of fire alarm boxes. At the left, the modern quick-action door, in which the lever or hook which is pulled to send in the alarm is clearly visible behind a hinged glass panel. At the right, an older type of box in use in many cities. A key or door handle is behind a glass guard. In this type it is necessary to break the glass, open the door and pull a hook inside.

THE accompanying diagram shows the elements of a fire alarm system for any community where twenty to thirty street boxes are sufficient to cover the entire area to be protected. Larger communities would have a system which is similar except that there would be more than one circuit for boxes and there would have to be more elaborate apparatus at the fire alarm headquarters. There are thousands of isolated towns and villages and suburban communities for which a layout similar to that illustrated would serve.

Where the community now has an outside signal such as a siren or horn, all that is needed is the central station panel, the outside circuit and boxes to be installed so that the entire community is covered. The central station panel includes a battery, facilities for charging it, and testing equipment. Boxes on the street should so far as possible be placed so that a person coming out of the front door of his residence or place of business may see a box either up or down the street, whether or not he happens to know exactly where it is.

How many times has your department chased off to a fire at a location which was not correctly given? It seems that at time of fire normally stable persons become so excited that they can't be depended upon to report the fire coherently. Quite commonly they will rush to the phone, shout something unintelligible to the operator and hang up. In suburban metropolitan areas persons even frequently put in a call to the wrong fire department. Operators are often very ingenious in tracing the calls, but are more frequently unable to help the department.

The fire alarm box eliminates errors resulting from misunderstanding of street names, the use of "East" for "West," the garbling of house numbers and other transposition of terms in giving directions. It sends in a signal which identifies its location beyond a chance for error. If a coded outside signal is used, every member of the call force knows the exact location of the fire.

A dependable fire alarm system is a substantial item of protection. You can assure your citizens that when they use it, it will get the fire department to the right place and without disastrous delays or confusion. The cost of a modern fire alarm system can be measured in terms of the protection it affords, and would be in all cases much less than the loss which might occur because of a delayed or confused alarm in any one of dozens of buildings in every community served by a fire department.

Fire Tools

Battering Rams

CUTTING or crashing openings in a wall to reach a fire is good practice where this is easier than trying to open heavily barred windows or to force metal doors. This calls for the use of a battering ram. An axe or lock breaker and door opener may be too light weight to make an impression, or may take too long to make an opening. When several men take hold of this heavy ram and swing it, a great force can be exerted on locked doors or on walls and partitions.

Rams weigh about 50 pounds each and are about 5 feet long. A common type with two handle bars is illustrated above.

Making a Good Job of It

By Warren Kimball

In this column each month an experienced volunteer fireman discusses the handling of a typical fire. Readers are invited to describe fires which illustrate one or more principles of craftsmanlike fire fighting. (Names and places may be omitted.)

ONE of the important maneuvers in a battle against fire is that of locating the blaze. Fire has an effective cloak behind which it operates whenever a building is heavily charged with smoke. How often on a fire grounds the public is heard to say, "This is not much of a fire, there is nothing but smoke." The truth usually is that such a fire is most difficult to fight. Visible flames are usually comparatively easy to control. Flames hidden behind thick smoke are often hard to locate before much damage is done. It is essential that firemen be able to locate a fire in a building heavily charged with smoke before the fire spreads beyond control.

A typical case is a fire which occurred in a drug store located in a two-story brick building. When firemen arrived the building was heavily charged with smoke and no fire was visible. Additional fire companies were called and streams were placed in operation through the windows and doors causing heavy damage to the contents of the store. An assistant chief, responding on the second call, entered the building to find the actual fire. Crawling low he headed into the smoke and heat waves which he felt against his face. These led him to the basement stairs. Going down and across the basement he found the fire in a supply room out of reach of the streams. Having located the fire, it was an easy matter to direct one stream so as to extinguish it.

The chief in charge at the fire had been a fireman for many years but apparently had not learned how to locate a fire. Had he known that the heat from a fire is like an expansive force radiating from the fire center, disclosing the secret of where the fire is hidden, the fire might have been more quickly located and a large water loss avoided. Alert fire fighters are familiar with the outward push of heated smoke and gases. They use this knowledge as one of the means of locating a fire.

Volunteer Firemen

Professional Journal of the Volunteer Firemen's Section of the National Fire Protection Association

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Effect of Dwelling Inspections We have referred in various articles in VOLUNTEER FIREMEN from time to time to the value of inspections of dwellings for common fire hazards. A striking illustration of the results secured from such inspections is contained in a letter received from Chief Robert B. Ford of the Russell Fire Company of Middletown, Connecticut (Member Volunteer Firemen's Section). We quote from Chief Ford's letter as follows: "In our district of the City of Middletown we take care of some fourteen hundred dwellings. By regular inspections of these dwellings, as well as schools, manufacturing establishments, etc., we have been able to reduce our fires in the last four or five years from seventy-five to a hundred down to seventeen in 1934 and twelve in 1935, so that I know that inspections, general clean-ups, etc., go a long way toward preventing fires." Chief Ford expresses the hope that some day every volunteer fire department will conduct fire prevention inspections of all the property under their jurisdiction. To this we heartily agree. There is no surer or more efficient way to reduce loss of life and property by fire than by persistent regular inspections for fire hazards.

Locking the Barn Door If you have some well-recognized deficiency in fire fighting equipment and are having a hard time getting local officials to act to provide what is needed, show them this story of the plight of the little city of Defiance, Ohio. On June 13 fire destroyed the Defiance Pressed Steel Company plant, with a loss of over $500,000. This was one of the leading industries of the city and as a result four hundred men were thrown out of work.

The large loss was attributed in reports to difficulties the first companies of the local fire department had in getting water for effective hose streams. Both pressure and volume were insufficient for a strong initial attack on the fire and so it got away. Those who had urged the making of the needed improvements in local fire protective facilities had anticipated such a result.

Other cities immediately made attractive offers to the plant to leave Defiance and come where it could be given good fire protection. Threatened then with the loss of a major industry, the local city council then snapped out of it and appropriated $50,000 for new fire fighting equipment and voted to erect a 300,000 gallon reservoir and install larger water mains in the factory district.

It isn't often that we are able to point to such a clear-cut case of locking the barn door after the horse has been stolen, but here it is and we hope it may help you in your town.

The Out-of-Door Fire Season This is the season of the year when conditions are just right for forest and woods fires throughout the United States and Canada. People in cities, towns, and country alike need to be reminded that if they are to continue to enjoy the forests, summer homes, camps, and resorts fires will have to be prevented with forethought and carefulness. A little spark can destroy thousands of acres of trees and valuable summer home or resort buildings. More serious than this is the fact that human lives are also destroyed. Just recently a forest fire took five lives. Three of them were members of a CCC Camp who were helping hundreds of others fight miles of rapidly spreading flames.

Firemen should lose no opportunity to advise that care be taken in building camp fires, watching them closely, and making sure that they are extinguished before leaving. This also helps by cutting down the number of fire department runs to grass, brush, woods, or building fires in the rural sections. Fighting such fires is a different job from fighting fires in towns where they are discovered earlier, where the department can reach them quicker, and where there is likely to be better fire fighting equipment and water supplies.

Ordinances on Special Hazards If you have local ordinances covering such hazards as fireworks, oil burners, electrical installations and other like matters you would be doing a favor by sending copies to Capt. William Paul Babcock, Fire Prevention Department, Village of Nyack, N. Y. The folks in Nyack are particularly interested in ordinances successfully working in cities of approximately 5,000 population. Many cities use the regulations of the National Fire Protection Association as the basis for such local ordinances. A list of the standard regulations available will be sent to any reader on request.

New Members and Renewals During the past month 265 firemen from 12 fire departments listed below enrolled in the Volunteer Firemen's Section for the first time. In addition, 172 men from 7 companies or departments sent in their renewals. The total membership is now 10,440.

Bishop Hill Community Fire Department, Bishop Hill, Illinois.

Earleigh Heights Volunteer Fire Company, Severna Park, Maryland.

Roseville Fire Department, Roseville, Michigan.

Olivia Fire Department, Olivia, Minnesota.

East Jaffrey Fire Department, East Jaffrey, New Hampshire.

Defiance Engine Company No. 3, Hopatcong, New Jersey.

Hempstead Fire Department, Hempstead, New York.

Niagara Engine Company No. 6, Schoharie Fire Department, Schoharie, New York.

Mingo Junction Volunteer Fire Department, Mingo Junction, Ohio.

Blue Ridge Mountain Fire Company, Blue Ridge Summit, Pennsylvania.

Herndon Volunteer Fire Department, Herndon, Virginia.

Lodi Volunteer Fire Department, Lodi, Wisconsin.

Membership Plan

Volunteer Firemen's Section National Fire Protection Association

WHERE 20 or more firemen in a volunteer company or department affiliate with the Volunteer Firemen's Section the cost is 50 cents a year *per man.* Each fireman will receive one copy of VOLUNTEER FIREMEN, the monthly journal of the Volunteer Firemen's Section, mailed regularly to his home address. The company or department automatically becomes a member of the National Fire Protection Association and is entitled to full privileges of membership. All the literature regularly issued to N.F.P.A. members is mailed to headquarters of the company or department.

Membership may be applied for by one member of the company or department collecting 50 cents for each of the 20 or more members and making a single remittance for the group, or the company or department may take a membership for its men and make a single remittance from the company or department treasury.

Companies With Less Than 20 Members

Because of the large amount of material mailed to members, not less than $10.00 can be accepted from any company or department for membership dues. In the case of companies or departments with less than 20 men this means that the cost divided among them will be slightly higher per man. Of course, some such companies or departments may prefer to make a single remittance of $10.00 from the company or department treasury. In other cases a few interested citizens, not members of the company or department, may be glad to contribute 50 cents apiece to make up the required minimum of 20, so that the members may secure the rate of 50 cents per man.

These companies or departments have full privileges of N.F.P.A. membership as above, and each member receives the monthly magazine, VOLUNTEER FIREMEN, at his home.

Discussion Subjects

THE continued interest in this department is a source of gratification to those who participate in preparing the questions and answers. Last month's topics are covered in this issue.

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Q. What must firemen know in order to accomplish an effective and safe job of ventilation?

A. In general, a knowledge of the building is necessary so that full advantage may be taken of all opportunities to create drafts which will let smoke out so that firemen may get in. Special instruction and training is required so that these operations may be done safely, avoiding back-drafts and injuries to men. We are indebted to Chief J. W. Just, of the Western Actuarial Bureau for a more complete discussion of this subject appearing on pages 4 and 5 of this issue.

Fire Fighting Work in Sprinklered Buildings

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Q. What can firemen do in sprinklered properties before, during and after a fire to reduce losses from fire and water?

A. Before the fire, the building should be thoroughly inspected and a plan for handling a fire in it worked out. During the fire, the sprinkler system should be allowed to do most of the work of extinguishment rather than using hose streams. (Of course if the fire is caught while small, before sprinkler heads have operated, it should be attacked with small lines or extinguishers.) During the fire, waterproof covers should be spread to prevent water damage, and after the fire any water on floors or elsewhere should be promptly cleared up and all contents properly protected from the weather if necessary.

Previous knowledge of the arrangement of the sprinkler system in the building is essential, particularly as to valves and amount of water available. A good general policy for fire departments to follow upon arriving at a fire in a sprinklered building is to immediately connect up lines from a pumper to the fire department connection provided. Thus all available water feeds the sprinklers. The pumper usually is able to raise the delivery pressure so that the sprinklers will be more effective. Also, if the main control valve of the sprinkler system has been inadvertently closed, the back pressure will build up at the pump, blow the relief valve and thus give notice of the trouble.

Write for "Use of Automatic Sprinkler Systems by Fire Departments," N.F.P.A. committee report, single copies 10c (Free to members of Volunteer Firemen's Section).

Problem Questions
FOR AUGUST

Suggested for discussion at company and department meetings this month

43

Are chimney and stack spark arresters of value for preventing wooden shingle roof and other fires?

44

What does the public expect of the fire department during Fire Prevention Week in October?

Watch for the answers in the next issue of VOLUNTEER FIREMEN

The "Model A" Super

Which Every Volunteer Fire Department Should Know About

Both 1 Quart and 1½ Quart Sizes

Every volunteer Fire Department should know the exclusive qualities of this first-aid extinguisher which experience shows should be the first to be carried into any fire because:—

FIRST:—

It is safe to use on electrical fires. Fyr-Fyter fluid is not only a powerful fire extinguishing fluid, but a most certain insulation — safeguarding the operator against serious injury or possible death from electrical contact.

AND SECOND—

It is effective on concealed fires in walls and other "hard to reach" locations and is effective also on fires in greases, oils and the more inflammable liquids.

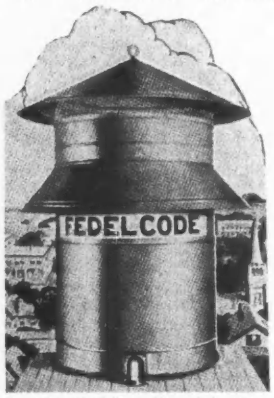
Write us (without obligation on your part) for complete information about this marvelous new "Model A" Super (Vaporizing Liquid) Fyr-Fyter. You'll enthusiastically recognize its value to your department and the safety of your community. It stands hard usage.

THE FYR-FYTER COMPANY

Dept. 20-8 DAYTON, OHIO

FEDERAL SIRENS

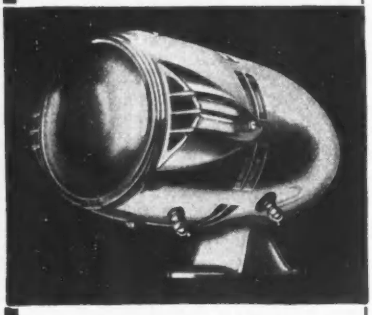
Can Be Heard for Miles
Calls Volunteers Instantly



Federal Vertical Siren Mounted on Tower.
Approved by the National Board of Fire Underwriters.

Federal VERTICAL Sirens are most practical because
(1) They distribute sound in a wide range in all directions.
(2) Rugged in construction to withstand all kinds of abuse.
(3) Entirely weatherproof housing finished in Red Duco withstands sleet, rain, hail and dust storms.
(4) It is equipped with special high speed, ball bearing Federal Siren motors.

Write for Bulletin No. 55 for complete details.



FEDERAL MODEL W
With FLASHING BEAM LIGHT
DOUBLE ACTION
SIREN
STREAMLINED
WITH FLASHING LIGHT AND A NEW TONE ROAR
CONSIDER THESE FEATURES:
- Streamlined beauty combined with rugged construction durability.
- A Siren Roar combined with Flashing Rays of Light.
- Greased sealed ball bearings aid ease of operation.
- Flashing light can be operated with siren roar or independently.
- Fully chrome plated.
- Loudest by test . . . brightest warning light.

Order Your Siren Now

FEDERAL ELECTRIC CO.
8755 So. State St. Chicago, Ill.

Wins $10.00 on Second Try

First Extinguisher Story Got Honorable Mention But He Went After Cash Award in Pyrene Prize Letter Contest

JOE BOHANON, Assistant Chief of the Fire Department in Hominy, Oklahoma, wasn't to be discouraged when his first offering in the Pyrene Prize Letter Contest got him only an Honorable Mention in the June issue this year. He snapped right back with the story which gets the first award this month.

Any other fire department member can do the same thing. Let us have that story of the use of an approved extinguisher of any make where life or property was saved through having the right extinguisher promptly available.

This contest is sponsored co-operatively by the Pyrene Manufacturing Company of Newark, N. J., and the editors of VOLUNTEER FIREMEN.

FIRST PRIZE — $10.00

Joe Bohanon, *Assistant Chief,*
Fire Department, Hominy, Oklahoma.

Holds Fire in Smoke-Filled Garage

"About four o'clock one winter morning, our alarm sounded for a garage fire. Upon our arrival, the negro watchman had the only door open, but the building was so crowded with cars that one could hardly enter.

"We immediately went into action with a carbon tetrachloride extinguisher. Crawling on the floor, because of heavy smoke, the seat of the fire was reached: a blazing tub of gasoline and an electric motor. The extinguisher easily took care of this fire. In the meantime, autos were moved out of the garage and the space aired out. A few remaining sparks on smouldering woodwork were found. Had we delayed till the fire could have been readily reached with large extinguishers or hose streams I believe that we would have lost the entire building."

SECOND PRIZE — $3.00

C. M. Wight, *Secretary,*
Fire Department, Pasco, Washington.

Pays Firemen to Carry Extinguisher

"The carbon tetrachloride extinguisher I carry in my car has been of value on numerous occasions. A typical incident occurred in June. I had driven our assistant chief to his home when an alarm sounded. He secured the address from his residence phone, found we were already half the distance between the station and the source of the call, which was from the Columbia River bridge separating Pasco and Kennewick. I drove directly to the bridge, leaving the assistant chief at the approach to direct the apparatus and check traffic. A carelessly tossed cigarette had ignited the decking timbers and board walk. My carbon tetrachloride extinguisher killed the blaze before the rest of the department arrived."

THIRD PRIZE — $2.00

Alex. Logan, *Captain,*
Fire Department, Brandon, Manitoba.

Three Squirts and Out!

"A paint boiler overflowed in a local factory. On our arrival the paint was spreading over floors and carrying fire with it. We used soda and acid chemicals to extinguish the fire on floors successfully, but we were unable to extinguish the paint burning in the boiler until I secured a small carbon tetrachloride fire extinguisher. After about three squirts the fire was out."

HONORABLE MENTION

John W. Hambleton, *Chief,*
Fire Department, Cannelton, Ind.

Aug. Ranslem,
Fire Department, Gresham, Neb.

Henry J. Erickson, *Chief,*
Volunteer Fire Department,
Sanish, N. D.

CONTEST RULES

1. Contestants in the Pyrene Prize Letter Contest must be members of their Local fire department.
2. Letters are to describe actual experiences where any approved fire extinguisher of any make has saved lives or property.
3. Trade names may be used but will be deleted in publication. Publishers reserve the right to edit winning letters to permit publication.
4. Each contestant automatically vouches for the truth of the facts presented from his own or others' experience.
5. Only one letter may be submitted each month.
6. Letters must be legibly written in ink or typewritten on white paper, one side only. Preference will be given to letters not over 250 words in length.
7. Letters received after the 8th of the month will be judged in following month's competition.
8. Monthly prizes in cash will be: 1st, $10.00; 2nd, $3.00; and 3rd, $2.00.
9. Address contest letter to Pyrene Prize Letter Contest, National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

Phomaire PLAY PIPE and Phomaide SOLUTION

A New Low-Cost Foam Tool

Combines Water, Solution and Air To Make Foam *Mechanically*

Phomaire Foam flows over the flammable liquid surface, pushes fire into corner and snuffs it.

A combination oil and wood fire. After flammable liquids have been blanketed with foam a water stream from the Phomaire Play Pipe mops up any lingering fire in the rubbish.

Most fire departments have needed larger-capacity foam equipment to fight garage, cellar, industrial and street fires involving gasoline and oil. ***Now you can have the latest foam equipment***—at low cost, producing foam by an entirely new method, mechanically rather than chemically.

This new unit the specially designed PHOMAIRE Play Pipe connects to your hose line (¾″ to 2½″). When the water is turned on, PHOMAIDE, a new foam-making solution carried in a Hip Pack, and air are automatically drawn into the water stream in the proper proportions to form foam. Simple, isn't it!

In fact everything about the Phomaire Play Pipe is simple. That's why it's such a valuable fire-fighting tool.

It is connected as easily as an ordinary water nozzle. The solution, requiring no mixing, is poured into the Hip Pack, and the pick-up tube is dropped into the solution. There are no moving parts, no complicated preliminaries, no confusing adjustments. And only one man is required at the Play Pipe.

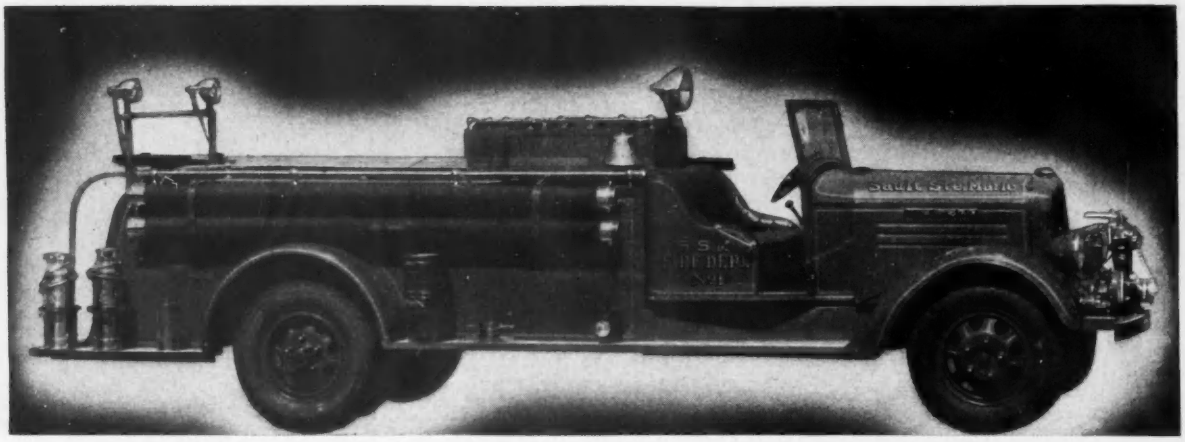
Less than 20 gallons of water at a pressure of 75 pounds or more are required per minute, making it ideal for use with booster tank. This is the only foam unit available for small lines. One gallon of Phomaide Solution makes 350 gallons of foam. 300 to 400 gallons per minute may be continuously produced by merely pouring additional solution into the Hip Pack.

This is the biggest fire protection news you have read in ages. And certainly you want to know more about it. Without obligation, ask Pyrene to send you descriptive literature and prices on the Phomaire Unit illustrated at the left.

Don't wait! ***Mail your request now.***

Pyrene Manufacturing Company
NEWARK NEW JERSEY
ATLANTA KANSAS CITY CHICAGO SAN FRANCISCO

BARTON FIRE PUMPS



CENTRIFUGAL TYPE - - - - FRONT-MOUNTED

Marvelous Performance at LOW COST!

Barton Fire Pumps are recognized the world over as the best and most economical answer to the majority of fire protection problems.

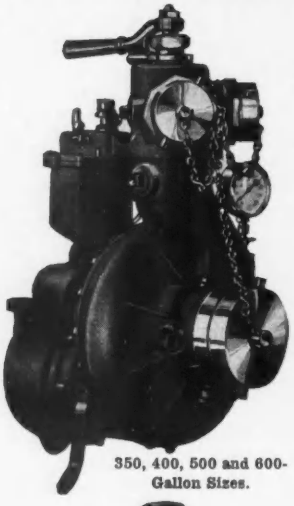
Unlike rotary and piston types, a modern Barton Centrifugal Pump has NO PARTS SUBJECT TO DAMAGE OR EXCESSIVE WEAR when pumping the dirtiest water.

Thus with a Barton you are not limited to pumping from city hydrants. In fact, every day Barton Pumps—automatically primed—are called upon to fight country and suburban fires, delivering huge volumes of water at smashing pressures from ponds, cisterns, rivers, etc.

Any Barton Pump can be completely installed on a standard truck WITHOUT A SINGLE CHASSIS CHANGE. A good mechanic can do the entire mounting job in a few hours—entire expense but a few dollars.

New Edition (No. 4) of Bulletin 75 Contains Valuable Fire Stream Data

Write for your copy today! Learn about these wonderful Barton Pumps—how you can effect BIG SAVINGS and still have the finest pumping equipment. And, besides, our copyrighted Fire Stream Data will be found very useful.

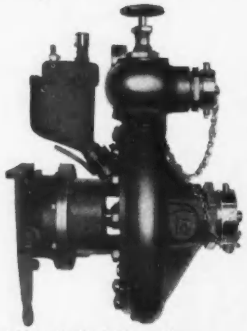


350, 400, 500 and 600-Gallon Sizes.

U-TYPE PUMPS

with Built-in-Gear-Drive for High Pressures at LOW Motor Speeds

This is the Barton DeLuxe Line —"World's Finest Front-Mounted Fire Pumps." All sizes Underwriters' tested. All ratings based on pumping from suction. When pumping from hydrant, every size delivers far in excess of its rating. Built-in Gear-Drive means that truck motor operates at approximately one-half pump speed. With a U-Type Barton Pump wide open, THE MOTOR LOAFS ALONG UNDER NO STRAIN.



400 and 500-Gallon Sizes.

F-TYPE PUMPS

with Direct-Drive

These two Barton Fire Pumps—also Underwriters' tested — have every feature offered by the U-Type Pumps, except the Gear-Drive. They are Direct-Drive Pumps, operating at direct motor speeds. This construction makes for lower cost. In fact, for 400 and 500-gallon capacities, the F-Type Pumps sell at the lowest prices on record.

And we also build smaller fire pumps for booster service at even lower prices—ask us about them!

AMERICAN STEAM PUMP COMPANY

BATTLE CREEK, MICHIGAN . . *PUMPS AND PUMPS ONLY SINCE 1873*